

What is claimed is:

1. A method for identifying an inhibitor of E7-induced CDK2 kinase activity, comprising the steps of

5 a) measuring CDK2 kinase activity on a CDK2 substrate in the presence of human papillomavirus (HPV) E7, or a fragment thereof, and in the presence and absence of a test compound, and

10 b) identifying the test compound as an inhibitor of E7-induced CDK2 kinase activity when decreased phosphorylation of the CDK2 substrate is detected in the presence of the test compound compared to phosphorylation of the CDK2 substrate detected in the absence of the test compound.

15 2. The method according to claim 1 wherein the HPV E7 fragment is selected from the group consisting of amino acid residues 1 to 27, amino acid residues 1 to 38, amino acid residues 1 to 48, amino acid residues 1 to 69, and amino acid residues 1 to 87 of SEQ ID NO: 1.

20 3. A method for identifying an inhibitor of E7-induced CDK2 kinase activity comprising the steps of

25 a) measuring CDK2 kinase phosphorylation of a CDK2 substrate;

 b) measuring increased CDK2 kinase phosphorylation of the CDK2 substrate in the presence of human papillomavirus (HPV) E7, or a fragment thereof, to determine E7-induced CDK2 kinase activity;

 c) measuring CDK2 kinase phosphorylation of the CDK2 substrate in the presence of HPV E7, or a

fragment thereof, and in the presence of a test inhibitor compound; and

5 d) identifying the test compound as an inhibitor of E7-induced CDK2 kinase activity when the increased phosphorylation measured in step (b) is reduced in the presence of the test compound.

10 4. The method according to claim 3 wherein the HPV E7 fragment is selected from the group consisting of amino acid residues 1 to 27, amino acid residues 1 to 38, amino acid residues 1 to 48, amino acid residues 1 to 69, and amino acid residues 1 to 87 as set out in SEQ ID NO: 1.

15 5. The method according to one of claims 1, 2, 3, or 4 wherein the CDK2 substrate is selected from the group consisting of histone H1, HPV protein E1 and HPV protein E2.

6. The method of claim 5 wherein measuring of CDK2 kinase activity is carried out in the presence of a cyclin.

20 7. The method of claim 5 wherein the cyclin is selected from the group consisting of cyclinA and cyclinE.

25 8. A method for identifying an anti-viral agent comprising the steps of
a) identifying an inhibitor of E7-induced increase in CDK2 kinase activity;
b) measuring viral proliferation in the presence and absence of the inhibitor identified in (a); and
c) identifying the inhibitor as an antiviral agent when decreased viral proliferation is detected in the presence of the inhibitor compared to
30 viral proliferation in the absence of the inhibitor.

9. A method for reducing human papillomavirus (HPV) E7-induced CDK2 kinase activity comprising the step of contacting an HPV infected cell with an inhibitor of E7-induced CDK2 phosphorylation.

5 10. A method for reducing human papillomavirus (HPV) E7-induced CDK2 kinase activity comprising the step of contacting an HPV infected cell with an inhibitor of E7 binding to CDK2 kinase complex.

10 11. A method for ameliorating human papillomavirus (HPV) proliferation comprising the step of administering to an individual in need thereof an effective amount of an inhibitor of HPV E7-induced CDK2 kinase activity.

15 12. A method for ameliorating human papillomavirus (HPV) proliferation comprising the step of administering to an individual in need thereof an effective amount of an inhibitor of HPV E7 binding to CDK2 kinase complex.

13. The method of any of claims 10 and 12 wherein binding of E7 to CDK2 kinase complex is effected through interaction with a cyclin component of the activity.